WHAT IS CLAIMED IS:

1. A method for generating palladium-catalyzed organic reaction products, comprising performing an organic reaction catalyzed with palladium except Pd/C, the organic reaction being

i) Heck reactions in which a first organic species, Org^1X, is reacted with a second organic species, H-Olefin, in order to provide a product, Org^1-Olefin,

ii) Stille reactions in which a first organic species, Org^1X, is reacted with a second organic species, $R^1{}_3Sn\text{-}Org^2$, in order to provide a product, $Org^1\text{-}Org^2$, or

iii) Suzuki reactions in which a first organic species, Org^1X, is reacted with a second organic species, $R^2{}_2B\text{-}Org^3$, in order to provide a product, $Org^1\text{-}Org^3$,

wherein:

Org^1 is aryl, heteroaryl, vinyl, acetylenyl, alkyl, allyl, benzyl, acyl, or benzoyl, or mono- or poly-substituted aryl, heteroaryl, vinyl, acetylenyl, alkyl, allyl, or benzoyl;

X is a halide, triflate, mesitylate, nonaflate, carbonylhalide, sulfonylhalide, perfluoroalkylsulfonate, arylphosphate, alkylphosphate, diarylarsine, diarylphosphine, diarylstibine, aryliodonium salt or diazonium salt;

H-Olefin is an olefin having a double bond and an olefinic hydrogen atom, the double bond in the H-Olefin being unsubstituted or mono-, di- or tri-substituted;

R^1 is alkyl, aryl or heteroaryl, or mono- or poly-substituted alkyl, aryl or heteroaryl;

Org^2 and Org^3 are both aryl, heteroaryl, vinyl, acetylenyl, alkyl, allyl or benzyl, or mono- or poly-substituted aryl, heteroaryl, vinyl, acetylenyl, alkyl, allyl or benzoyl; and

R^2 is hydroxy, alkoxy, aryloxy or heteroaryloxy;

wherein microwave energy is supplied to the organic reaction in order to heat said organic reaction.

2. A method according to claim 1, wherein the organic reaction is the Heck reaction.

3. A method according to claim 2, wherein the organic reaction is performed in solution.

4. A method according to claim 2, wherein the organic reaction is performed on a solid support.

5. A method according to claim 4, wherein the first organic species, Org^1, or the second organic species, H-Olefin, is attached to the solid support.

6. A method according to claim 5, wherein the first organic species, Org^1, or the second organic species, H-Olefin, is attached to the solid support via a linker.

7. A method according to claim 2, wherein the organic reaction is part of a combinatorial chemistry process.

8. A method according to claim 1, wherein the microwave energy is solely or predominantly provided in the form of a standing wave.

9. A method according to claim 1, wherein the organic reaction is used in the creation of a chemical library.

10. A method according to claim 1, wherein the microwave energy is provided for a period of 2-7 minutes.